

II. AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior listings, or versions of claims.

1. (Currently Amended) A semiconductor device comprising:

a substrate including silicon;

a dielectric layer atop the substrate, the dielectric layer including a first dielectric sub-layer, a second dielectric sub-layer and a first non-discrete transitional dielectric sub-layer residing between the first and second dielectric sub-layer, wherein the first dielectric sub-layer has an etch resistance different than the second dielectric sub-layer; and

an opening extending no deeper than the dielectric sub-layer nearest the substrate;

wherein a composition of the first non-discrete transitional dielectric sub-layer varies gradually through thickness thereof from a first composition substantially the same as the first dielectric sub-layer where the first non-discrete transitional dielectric sub-layer contacts the first dielectric sub-layer to a second composition substantially the same as the second dielectric sub-layer where the first non-discrete transitional dielectric sub-layer contacts the second dielectric sub-layer.

2. (Previously Presented) The semiconductor device according to claim 1, wherein an etch resistance of the first dielectric sub-layer is greater than an etch resistance of the second dielectric sub-layer.

3. (Previously Presented) The semiconductor device according to claim 1, wherein the first dielectric sub-layer has a greater content of at least one of carbon and fluorine than the second dielectric sub-layer.

4. (Previously Presented) The semiconductor device according to claim 1, wherein the first dielectric sub-layer includes at least one component not included in the second dielectric sub-layer, the at least one component being selected from a group consisting of fluoroalkylsilanes, fluoralkylsiloxanes, perfluoroalkylsilanes, perfluoroalkylsiloxanes, alkylsilanes, and alkylsiloxanes.

5. (Original) The semiconductor device according to claim 4, wherein the at least one component is selected from a group consisting of methylsilane, dimethylsilane, trimethylsilane, trifluoromethylsilane, 1,2-disilanotetrafluorethylene, 1,3-bis(silanodifluoromethylene)disiloxane, 2,2-disilanohexafluorosilane, bis(trifluoromethyl)disiloxanyl difluoromethane, octamethylcyclotetrasiloxane, and tetramethylcyclotetrasiloxane.

6. (Previously Presented) The semiconductor device according to claim 1, wherein the dielectric layer includes a third dielectric sub-layer residing between the substrate and the first dielectric sub-layer and a second non-discrete transitional dielectric sub-layer residing between the third dielectric sub-layer and the first dielectric sub-layer.

7. (Previously Presented) The semiconductor device according to claim 6, wherein the second dielectric sub-layer and the third dielectric sub-layer have substantially the same etch resistance.

8-20. (Cancelled).

21. (Currently Amended) A semiconductor device comprising:

a substrate;

a dielectric layer atop the substrate, the dielectric layer including a first dielectric sub-layer, a second dielectric sub-layer and a first non-discrete transitional dielectric sub-layer residing between the first and second dielectric sub-layer, wherein the first dielectric sub-layer has an etch resistance different than the second dielectric sub-layer; and

an opening extending no deeper than the dielectric sub-layer nearest the substrate;

wherein the first dielectric sub-layer includes at least one component not included in the second dielectric sub-layer, the at least one component being selected from a group consisting of fluoroalkylsilanes, fluoralkylsiloxanes, perfluoroalkylsilanes, and perfluoroalkylsiloxanes; and

wherein a composition of the first non-discrete transitional dielectric sub-layer varies gradually through thickness thereof from a first composition substantially the same as the first dielectric sub-layer where the first non-discrete transitional dielectric sub-layer contacts the first dielectric sub-layer to a second composition substantially the same as the second dielectric sub-layer where the first non-discrete transitional dielectric sub-layer contacts the second dielectric sub-layer.

22. (Previously Presented) The semiconductor device according to claim 21, wherein an etch resistance of the first dielectric sub-layer is greater than an etch resistance of the second dielectric sub-layer.

23. (Previously Presented) The semiconductor device according to claim 21, wherein the first dielectric sub-layer has a greater content of at least one of carbon and fluorine than the second dielectric sub-layer.

24. (Previously Presented) The semiconductor device according to claim 21, wherein the at least one component is selected from a group consisting of methylsilane, dimethylsilane, trimethylsilane, trifluoromethylsilane, 1,2-disilanotetrafluorethylene, 1,3-bis(silanodifluoromethylene)disiloxane, 2,2-disilanohexafluorosilane, bis(trifluoromethylidisiloxanyl)difluoromethane, octamethylcyclotetrasiloxane, and tetramethylcyclotetrasiloxane.

25. (Previously Presented) The semiconductor device according to claim 21, wherein the dielectric layer includes a third dielectric sub-layer residing between the substrate and the first dielectric sub-layer and a second non-discrete transitional dielectric sub-layer residing between the third dielectric sub-layer and the first dielectric sub-layer.

26. (Previously Presented) The semiconductor device according to claim 25, wherein the second dielectric sub-layer and the third dielectric sub-layer have substantially the same etch resistance.